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#### STUDY GOAL AND OBJECTIVES

This report provides the industry executives with strategically significant competitor information, analysis, insight and projection on the competitive pattern and key companies in the industry, crucial to the development and implementation of effective business, marketing and R&D programs.

#### **REPORT OBJECTIVES**

- To establish a comprehensive, factual, annually updated and costeffective information base on market size, competition patterns, market segments, goals and strategies of the leading players in the market, reviews and forecasts.
- To assist potential market entrants in evaluating prospective acquisition and joint venture candidates.
- To complement the organizations' internal competitor information gathering efforts with strategic analysis, data interpretation and insight.
- To suggest for concerned investors in line with the current development of this industry as well as the development tendency.
- ◆ To help company to succeed in a competitive market, and

#### **METHODOLOGY**

Both primary and secondary research methodologies were used in preparing this study. Initially, a comprehensive and exhaustive search of the literature on this industry was conducted. These sources included related books and journals, trade literature, marketing literature, other product/promotional literature, annual reports, security analyst reports, and other publications.

Subsequently, telephone interviews or email correspondence was conducted with marketing executives etc. Other sources included related magazines, academics, and consulting companies.

#### **INFORMATION SOURCES**

The primary information sources include Company Reports, and National Bureau of Statistics of China etc.

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### **Abstract**

Lead-acid battery industry is a typical one of high energy consumption and heavy pollution. A large amount of electricity is consumed and pollutants such as lead dust/fume, acidic leaded wastewater, acid fog, and waste residues are discharged during the process of production. The center of global lead-acid battery production continues to transfer from developed countries to developing nations. As China's share of global lead-acid battery output has risen from 35% in 2010 to 42% in 2015, the country's development of lead-acid battery industry is of great significance to the world.

Global lead-acid battery demand amounted to 494.82 million KVAh in 2015, up 3.5% from a year ago, with China seeing a slowdown in demand growth rate and the rest of the world maintaining average growth rate of around 2%-3%. With enhanced efforts by the Chinese government to regulate lead-acid battery industry in the aspect of environmental protection since 2015 and the effect of lithium battery replacing lead-acid battery, global lead-acid battery demand growth is expected to fall along with that in China in the future, stabilizing at 2%-3%.

China's demand for lead-acid battery dropped by 7.3% to 196.214 million KVAh and lead-acid battery revenue fell 4.9% to RMB147 billion in 2015. The demand for the lead-acid battery for electric bicycle increased by -11.8%, the lead-acid battery for automotive starting 8.3%, the lead-acid battery for electric tricycle 21.6% and low-speed electric vehicle 35%, and the lead-acid battery for communications around 1%.

Since 2015, affected by the effect of lithium battery substitution, the demand for the lead-acid battery for electric bicycle has dropped quickly; sluggish demand from upstream sectors resulted in significantly slower growth in demand for the lead-acid battery for automotive starting and electric tricycle. In addition, as the year 2015 is the deadline for cleaning up excess capacity and the capacity causing severe pollution, a large number of small lead-acid battery producers can't get access permits, and have to stop production for rectification or produce secretively, leading to further slower apparent growth rate.

Johnson Controls is the world's largest lead-acid battery producer with a 15.7% market share in 2015. In spite of this, the company is suffering a sustained decline in market share from as high as 26% in 2010. As companies continue to expand capacity, the advantage of market leader is waning. Meanwhile, as China pursues the elimination of outdated capacity, the market space for small companies keeps narrowing. Attracted by emerging markets (lithium battery and PV), some companies (like Panasonic) reduces investment in lead-acid battery.

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Lead-acid battery finds wide applications in transportation, communications, power, and railway industries. Starting battery (automobile, motorcycle), power battery (electric bicycle, electric tricycle, low-speed electric vehicle, ATV/special-purpose electric vehicle), and communications back-up power hold a combined 90% share of total lead-acid battery consumption.

Over the next couple years, the demand for the automotive start-stop battery and Pb-C energy storage battery is expected to grow at a compound annual rate of 30%-40%, the battery for low-speed electric vehicle 25%-30%, the battery for electric tricycle and ATV/special-purpose electric vehicle around 10%-15%, and automotive starting battery within 9%.

For now, the lead-acid battery for communications back-up power, energy storage, and electric bicycle will be hardest hit by lithium battery in the short term. It is expected the application of lead-acid battery in communications back-up power will shrink slightly and the demand for the lead-acid battery for electric bicycle will see a negative annual growth of above 15% over the next few years.

The report focuses on the followings:

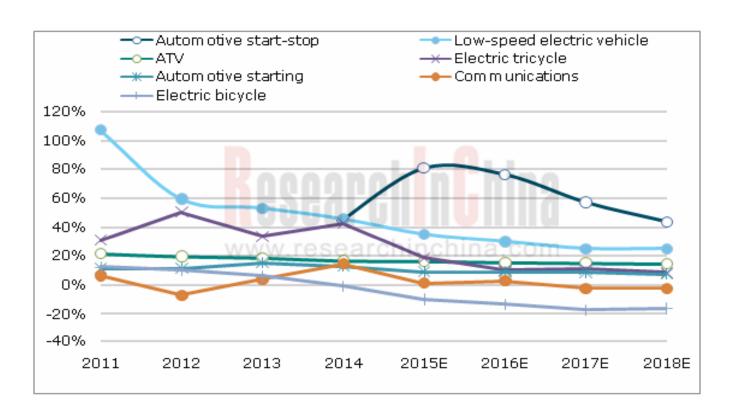
- •) Global and China's lead-acid battery industry (status quo of development, industrial policies, orientation of technological development);
- •• Global and China's lead-acid battery industry (industry size, demand, import & export, competition pattern, demand forecast for the next few years);
- •Competitive products (lithium battery, NI-MH battery, Pb-C battery) faced by lead-acid battery (comparison of technologies, applications, costs, shipments & trends, and major market participants);
- Application industries of lead-acid battery, covering automobile, back-up power & energy storage, electric bicycle, electric tricycle, low-speed electric vehicle, and ATV/special-purpose electric vehicle (status quo of development, demand for lead-acid battery, and market share of major lead-acid battery participants in the segments);
- 5 global lead-acid battery players (operation, technologies, customers, development planning, and output & sales);
- 10 Chinese lead-acid battery companies (operation, technologies, customers, development planning, and output & sales).

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# Growth Rates of Demand for Lead-acid Battery from Downstream Industry Segments, 2011-2018E



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